

RCRA INSPECTION REPORT

Elan Chemical Co.

268 Doremus Avenue

Newark, NJ 07105

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Inspectors: Abdool Jabar, USEPA, Environmental Engineer
Sam Kerns, USEPA, Environmental Engineer
Sampling Team: Robert Morrell, USEPA, Geologist
Stephen Hale, USEPA, Environmental Protection Specialist
Richard Coleates, USEPA, Environmental Scientist

Date of Inspection: 8/15/06

EPA Handler ID #: NJD042895680

Reason for Inspection: Compliance Evaluation Inspection

Attendees:

Richard Coleates, USEPA
Stephen Hale, USEPA
Abdool Jabar, USEPA
Sam Kerns, USEPA
Robert Morrell, USEPA
Ben Armenti, Vice President of Purchasing
Sal Brucato, Production Manager
Jocelyn Manship, Chief Executive Officer
Neil Mulvey, Environmental Consultant

Background:

Elan Incorporated is a privately owned business that is in business for over 30 years and produces natural and synthetic products for the flavor and fragrance industries. The company is made up of two major divisions-Elan Chemical Company and Elan Vanilla Co. Elan Chemical produces aromatic chemical intermediates for the flavor and fragrance industry. This accounts for 75 % of the chemical business, and the remaining 25 % serves the pharmaceutical and petrochemical field. Elan Vanilla Co. is a leading worldwide producer of vanilla products for top ice cream producers and bakeries.

The manufacturing of the fragrances and flavors is done in batches and a number of batches make up a campaign which may run for a few weeks. The facility operates on a 24 hour schedule, 7 days per week. Among company's customers are The Coca Cola Bottling Company, International Flavors and Fragrances and Givaudan. Elan manufactures about 80 different products.

This visit to the facility was to conduct sampling and to do a process review to determine if the facility uses F005 solvents. This was a follow-up visit to the facility to gather more information on their processes as well to conduct sampling of any of the solid waste that was generated on the day in question.

In the typical manufacturing process at Elan, an alcohol and an acid are reacted in a batch reactor to yield a crude product. (This crude product is considered to be a "work in progress," and it may be stored in containers before the manufacturing process is completed.) Since some reactors are dedicated for specific products or used repeatedly for the same product during a campaign, the need to clean the reactors with methanol (yielding F003 hazardous waste) may be infrequent. Cleaning of the distillation columns which refine the crude product is more frequent. The crude product is loaded into the kettle of a packed distillation column. The distillation fractions which are the outputs of the distillation process include the finished product (typically an ester) and material referred to by Elan as a by-product, "Compound SB." More comprehensively, the typical distillation fractions (all of which

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are vapors that are subsequently condensed, except for Compound SB which is the still bottoms removed from the kettle after distillation has been completed) are:

- Water (discharged to the POTW);
- "Lights" or "first cut" (sent to Tank 77);
- Recovered solvent (to be reused);
- The "TBR" cut (to be redistilled – the first product cut);
- The "second cut" of product (possibly "TBI" -- to be improved);
- The "bulk cut" of product (usually finished product meeting customer specifications);
- "Tails" (to be redistilled); and
- Still bottoms (sent to Tank 77).

Elan generates hazardous waste in two primary wastestreams which are ultimately commingled when they are accumulated in the facility's Tank 78, a 10,000-gallon hazardous waste tank. The precursor to one of these two wastestreams, Compound SB, consists of a two outputs of the facility's distillation process which cannot be reused or re-worked to yield salable products: still bottoms removed from the kettles of any of Elan's batch distillation columns (according to Elan's response to EPA's 4/28/06 3007 Information Request Letter (IRL)), this Compound SB material contains water, reactant/distillation residue, and a trace quantity of product) and the "lights" or "first cut" material from the distillation columns (according to Elan's IRL response, this Compound SB material is typically high in light-end (low boiler) organics). Compound SB material will, of course, vary depending on which product is being manufactured, but the products are all aromatic organic chemicals. At the point of generation, Compound SB is not yet considered to be a wastestream by Elan. Even if it were viewed as a waste by the facility, Elan's facility representatives claim, on the basis of operator knowledge, that it would not be a hazardous because it is not a listed waste and because it contains enough water that it would not be ignitable (the only relevant characteristic for Compound SB). According to statements by the facility representatives during this inspection, Compound SB (still bottoms and first cut material) is collected separately in drums before being pumped into Tank 77.¹ In Tank 77, sodium hydroxide solution is added to the commingled Compound SB streams to promote their separation into a water phase and an organic phase. The organic phase thus generated is a wastestream that Elan identifies as ignitable (D001) hazardous waste, and it is pumped into Tank 78, where it is mixed with the facility's other primary hazardous wastestream: spent methanol which had been repeatedly used to clean the distillation columns or, on a much less frequent basis, a reactor vessel. The spent methanol, which meets the listing description for F003 hazardous waste, is collected in drums at the rate of about two to four drums per month. The contents of these drums is also pumped into Tank 78 which causes the F003 waste code (and the D001 waste code) to apply to the entire contents of the tank. The facility makes sure that the water content of the hazardous wastestream accumulated in Tank 78 is no more than 5% so that it will be accepted by its designated TSD facilities.

¹ On 8/18/06 a subsequent communication from Neil Mulvey of Dewling Associates, Inc. (Elan's Environmental Consultant), was sent to Abdool Jabar to offer "clarification on the disposition of solvent wash and first cut material" and an estimate of the number of drums of Compound SB, now apparently defined to only be still bottoms (contrary to Elan's response to EPA's 4/28/06 IRL). Contrary to what the inspectors were told on 8/15/06, this "clarification" asserts that the first cut material collected in drums and transferred directly to Tank 78, not to Tank 77. If this is accurate, it would seem that the water content of the first cut material is low enough (5% or less) such that there is no need for the phase separation process which takes place in Tank 77.

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During this inspection, the EPA representatives asked the facility representatives to outline their processes (see the above summary) and asked specifically if any toluene and any of the other hazardous constituents which serve as the basis for the F005 listing are used at the facility. According to the report for an NJDEP inspection on 7/12/93, toluene was being used at the facility at that time, but the facility representatives said that at some point after 1993 it was decided to completely end the use of toluene at the facility. The inspectors found no evidence to the contrary. Regarding another F005 hazardous constituent, isobutanol, the facility representatives stated that it does continue to be used at the facility. Sam Kerns asked specific questions intended to confirm whether toluene might still be present at the facility as an ingredient in a raw material and to determine whether the isobutanol was being used as a reactant or for its solvent properties. Sam concluded from the process information submitted and the discussion with Elan's staff and its consultant that the facility does not knowingly use any raw materials containing significant amounts of toluene. Moreover, based on the description by facility representatives of how isobutanol is used as a reactant in the production of an ester product, Sam concluded that the facility does not use isobutanol as a solvent. (Isobutanol is reacted with acetic anhydride or acetic acid to yield isobutyl acetate.)

Given the points made in the preceding paragraph, the facility was asked why F005 was being used on their manifests and waste profiles to describe its predominate hazardous wastestream (the commingled waste accumulated in Tank 78). It was stated that, because no one thought much about it, the practice of completing manifests had continued the way it had always been done – even after Elan stopped using toluene. The persons preparing the manifests and the waste profiles had simply copied information from the older documents. Once this tradition had been established, it was not questioned or re-evaluated in light of operational changes at the facility. The facility representatives and their consultant easily recognized that this was an error, and they affirmed that the tradition would be ended and the wastestream would be properly identified on future manifests and waste profiles. On manifests sent to Giant Resources Recovery, Inc. [VAD098443443], F003 and F005 were given in Section I of the manifest (this is the "Waste No." field). On manifests sent to Marisol, Inc. [NJD002454544], F003 was given in Section I of the manifest and F005 and D001 were included in Section J (the "Additional Descriptions for Materials Listed Above" field).

The facility representatives stated that the methanol used to clean the distillation columns and reactors are placed into drums when they become spent, and within a day or two are pumped into Tank 78. The amount of spent solvents generated per month from the washing of the stills and reactors is about 2 to 4 drums. The facility representatives were asked if the drums were labeled with the words "Hazardous Waste," and they stated that the drums were not labeled with the words "Hazardous Waste."

The sampling team from Edison took samples of the Compound SB generated from one of the manufacturing process lines that was occurring that day to determine if the material generated exhibits any of the characteristics of hazardous waste. Result of the analyses will be available in mid-September. The facility was given split samples of the material by EPA.

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Conclusions

- (1) Hazardous waste (F003) is generated from the washing of the stills and reactors.
- (2) Two to four drums of hazardous waste is generated from the washing of stills and reactors and they are not labeled with the words "hazardous waste."
- (3) The portable pump used to pump material in Tank 77 is also used to pump hazardous waste in Tank 78.